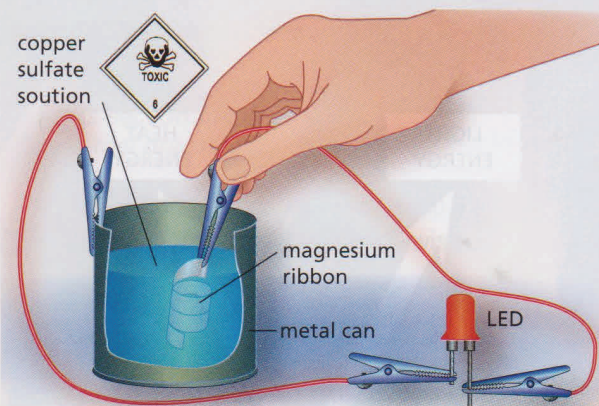


INQUIRY

4 Generating electricity

You will need: piece of magnesium ribbon (about 15 cm), small empty metal can (e.g. baby-food can), low voltage light-emitting diode (LED), 2 connecting wires with alligator clips, steel wool, copper sulfate solution

- 1 Clean the magnesium ribbon with steel wool until it is shiny. If the can has a coating on the inside, scratch this off in several places.
- 2 Curl up the magnesium ribbon by winding it around a pencil. Use a connecting wire with alligator clips to connect it to the long leg of the LED, as shown.



- 3 Three-quarters fill the can with copper sulfate solution.
- 4 Use the second connecting wire to connect the short leg of the LED to the edge of the can, as shown.
- 5 Finally, dip the magnesium ribbon into the copper sulfate solution. *Make sure that it doesn't touch the can or the other alligator clip.* Feel the can with your fingers.
 - What energy conversions have occurred?
 - Why did the LED glow only for a short time?

INQUIRY

5 Solar cells

You will need: solar cell kit (consisting of several solar cells connected to an electric motor, preferably fitted with a propeller)

What happens when you connect up the kit and put it in bright sunshine? What happens if you cover all or some of the solar cells?

- What energy conversions occur?

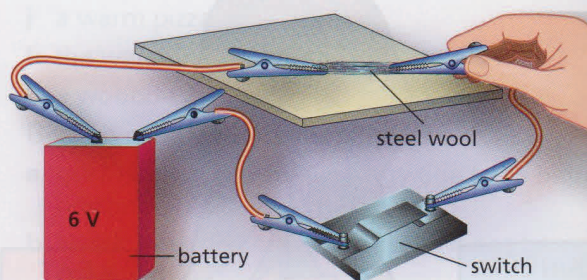
INQUIRY

6 Steel wool

You will need: 6 volt battery or power pack, 3 connecting wires with alligator clips, heatproof mat, small piece of steel wool, switch

Use the wires to connect the battery and switch as shown. Put the steel wool on the heatproof mat and connect the wires to it. Close the switch for a few seconds only. Observe what happens.

- What energy conversions occur?

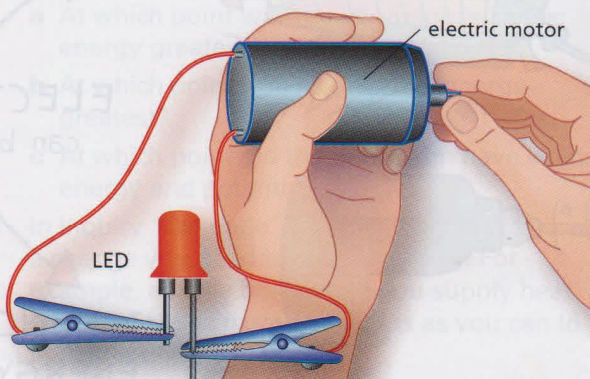


INQUIRY

7 Electric motor

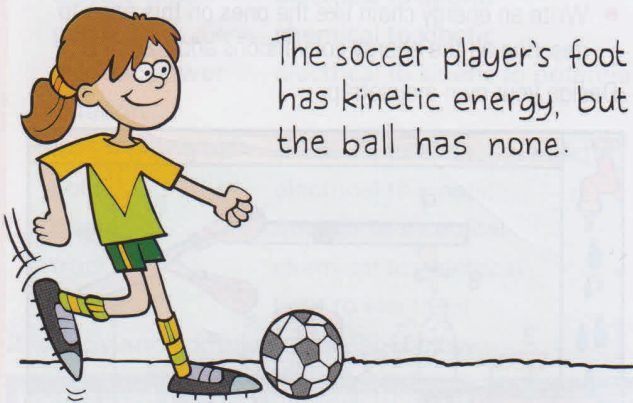
You will need: small electric motor with connecting wires and alligator clips, low voltage light-emitting diode (LED), 1.5 volt battery or power pack

- 1 Get the motor to work by connecting it to the battery.
- 2 Get the LED to glow by connecting it to the battery (long leg to the positive terminal).
- 3 Connect the LED to the motor as shown. Can you get it to glow briefly by giving the shaft of the motor a sharp twist?
 - What energy conversions have occurred in this activity?

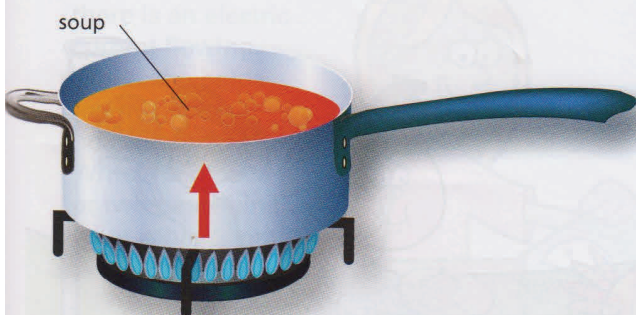


Energy transfers

Energy can be transferred from one object to another without changing its form. For example, when a soccer player kicks a ball, some of the kinetic energy of her moving foot is transferred to the ball, which also moves.



Another everyday energy transfer occurs when you heat soup on a stove. Heat is transferred from the gas flame or the electrical heating element to the soup, making it hot.



INQUIRY

8 Tuning fork

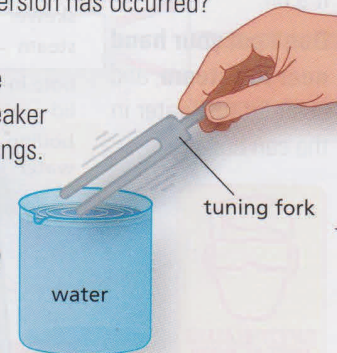
You will need: beaker of water, tuning fork

- 1 Strike the forked end of the tuning fork gently on the heel of your shoe (not on the bench). Hold the fork near your ear. Strike the fork again, but this time look closely at the prongs.

■ What energy conversion has occurred?

- 2 Strike the fork again, and touch the surface of the water in the beaker with the vibrating prongs.

■ How does this illustrate the transfer of energy?

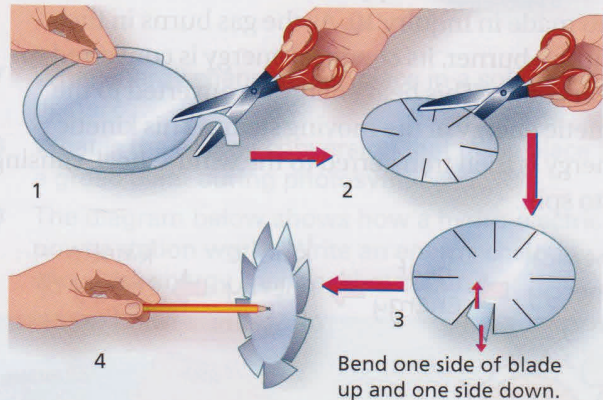


INQUIRY

9 Wind-wheel

You will need: foil pie plate, scissors, pen or pencil

- 1 Cut the sides from the foil plate and cut slits as shown. Turn up the same side of each of the sections.



- 2 Make a small hole in the centre of the wheel and push the point of the pen through the hole.

- 3 Blow on your wind-wheel to make it turn. If it doesn't turn easily, increase the size of the hole or bend the blades more. You may have the blades facing the wrong way.

■ Explain how energy was transferred to the wind-wheel.

Save your wind-wheel for Inquiry 10.